Which plants produce the most oils?

Name: Breannah Krips
Teaching content area(s) HS
Biology/Environmental Science
School: Saydel High School
Extern host site: Kemin Industries

Part I: Overview of Business

Kemin Industries

Kemin was founded in 1961 by R.W and Mary Nelson. Kemin began in Des Moines, Iowa and is in 90 countries around the world. Everyday, Kemin touches more than 3.8 billion people in more than 120 countries worldwide. Kemin works to find scientific solutions for everyday problems in preservation and quality of materials.

Part II: Job Specifics

I have been working as a botanist/plant scientist and I have been extracting essential oils from plants that could be used for many different things. One of the main problems I have helped with at Kemin is distillations. When plants begin to flower, they begin to lose the amount of essential oils they carry, because they use it up to help them flower. In doing the distillations, we were able to work towards finding the best time to collect plant tissue to yield the best oil.
The role of my part of Kemin and the group I work with is known as SCI, or specialty crop improvement. SCI makes up the base of Kemin's mission. SCI works to breed different plants with desirable traits that can eventually be used in items we use everyday.

Part III: Introduce the Problem

Kemin is using distillations to extract essential oils from different plants and then screening the oils for desirables. One thing I've noticed and we've talked about is the flowering vs. no flowering plants. Plants that have already flowered tend to produce less essential oil than those that have not flowered. Right now we are just focused on doing distillations with many different plants to see not only how much oil they produce, but also if there are desirables in the oils as well. I would like to try and test different plants at different parts of their life to see when they produce the most oil. In doing this I would like students to come up with their own experiments to test when the best time to extract oil from the plants is, if possible.

Part IV: Background

My students would need to know some basic plant anatomy such as nodes, leaves, stems, and roots as well as a few others. They will also need to know some of the life stages of plants such as; seeds, germination, growth, reproduction and pollination. Students would also need to know how to run a distillation and what is happening during each step of the distillation.

Part V: Business Solution

Kemin is mainly focusing on which plants produce the most oils and which plants produce the most desirable materials. I think once they wanted to mass produce a plant they would then look at the plant and do test like I plan to do in my classroom. There might be some variation of that that can be done it the end goal would be the best time to harvest material to produce the best results.
My students will look at the different amounts of oils that the plants produce, and they will decide as a class which product they would like to make better, such as; food preservation, lotions, rubs, etc. problems could be how much oil needs to be used or what types of oil needs to be added to make the product better.

Part VI: Student Solutions

I think students would each take a different approach with this. There are some different possibilities for problems to lean towards; how much essential oil will yield the best product or trying different types of essential oils effect the quality of the product. Students may also come up with their own solutions to solve this problem.
Plants produce essential oils in glands they usually have in their tissues, but essential oils can be found in almost every art of a plant (different plants don't always yield oil from the same place). There are many benefits of essential oils as well such as; preserving food, cleaning reduces aromatherapy, medicines, etc. Certain molecules in essential oils are used to preserve food and used in medicines as well.